1994 — Another Year of Comparisons

IPSC

Production Incentive Program — The Intermountain Power Service Corporation (IPSC) personnel achieved 77 percent of targeted goals for an award of 3.87 of their annual base wages, compared to 80 percent for the previous year. The primary difference resulted from an increase in lost time accidents and severity level. The net capacity factor was 86.98 percent and equivalent availability was 91.42 percent.

Safety and Training Transfer — In September of 1994, the Safety and Training Section of the Support Services Department was moved to the Operations Department. This was a move to consolidate the expertise of two work groups having knowledge about safety and hazardous products, and those employees who operate equipment in power plants.

Bench Marking Study — This year the final results of a Bench Marking Study conducted by UMS Corporation of Parsippany, New Jersey were released. The study compared 107 individual electric generating units owned by ten utilities across the country. Of the seven performance categories, IPP ranked "Best Performer" in all but the Gas Turbine category which didn't apply to IPP. The study measures service level against cost, but also examines practices. The results showed that IPSC maintains high performance levels by constant attention to plant maintenance, operations, chemistry, pollution control, technical support, coal handling, and costs.

Maintenance Technology Award — IPSC achieved recognition for its high level of skill and performance on May 25, 1994, when it was named recipient of Maintenance and Technology magazine's "Outstanding Maintenance Organization" for the year 1993, in the utility class. The magazine cited an emphasis on "training and planning along with an integrated Predictive/Preventive Maintenance Program to drive performance indices toward performance goals."

Mr. Ciro Buttacavoli, president of the magazine, presented the award to Joe Hamblin, IPSC Maintenance Superintendent. A reception honoring this achievement was attended by about 200 employees.

Scrubber Reheat Tube Bundles Removal — This project had been in the planning stages for several years. After extensive testing and using both computer and physical modeling of the mist eliminators and liquid collectors, a final design was submitted to the state of Utah for approval. The Utah State Board of Air Quality gave its approval to the new design, and the modifications were installed in IGS Unit 2 in November of 1994. The project consisted of converting from a dry stack with reheat to a wet stack. The actual work was organized in two steps. First, modifications to the chimney to permit wet stack operations; and second, removal of the reheat tube bundles in the scrubber modules. Work on the stack included adding turning vanes and moisture collectors, modifying the drainage system and reorganizing the instrumentation and control systems. This was necessary to mitigate liquid discharge. When the stack had been modified, a variance permit to perform the required testing was obtained. After testing showed that the new system worked, a new operating permit was granted by the state. The next step of removing the reheat bundles was then started; it would take several months before this work was completed. There were huge savings realized by not having to put heat back into the flue gas. The lifetime savings of these changes included less maintenance time, improved heat rate, and elimination of equipment replacement costs would have an estimated total savings of $28,750,000.

Plant Information System — In 1994, Phase 2 of the PI project added power block data. The DEC VAX 4100 computers were moved from the scrubbers to the unit Foxboro computer rooms and two new DEC Alpha 3500 computers were installed in their places. Foxboro computer gateways were purchased to link the information computer Foxnets with the VAX 4100s. This made over 9000 data points from power block available to PI for display and trending and reduced the load on the Fox 1/A, thus extending the life of the Fox1/A. Also in 1994, an on-line heat rate and performance calculation package (PMAX) was added to run along with the PI software.

Safety Maintenance Tagging System — IPSC assumed software support responsibility for the tagging system. Minor changes were made to make the system more functional for IPSC employees. These changes helped to modernize all aspects of the power generation process and produced a top level of safety, productivity, and availability.

Document Storage at IPSC — Various methods were developed to enhance the efficiency of document management at IPSC. Documents were now scanned into the system through the use of nine scan stations strategically located throughout the plant site. Other documents created via word processor or spreadsheet applications were imported directly into the Imaging System from the workstation. The COLD (Computer Output to Laser Disk) system enabled capture of electronic documents directly from the MPAC system on the DEC computer, indexed them, and inserted them into the Imaging System. A new storage medium on 5 1/4 inch optical platters provided increased benefits compared with the original 12 inch optical platters. This automation also

provided instant access to many of the purchasing and accounting documents required by various departments.

Utilization of the Imaging System for Document Management moved well beyond the initial intent of document archival and retrieval. The Purchasing, Receiving, and Accounting Sections were impacted most by the evolvement of records management.

The benefits of electronic imaging integration at IPSC included elimination of many of the manual document filing and routing practices with the related paper document storage and handling requirements. A reduction in human resources dedicated to paper document management was realized, while enhancing document availability. Further integration of the Imaging System with our business practices became an ongoing process to help realize the system's full benefits.

Generator Stator — General Electric (GE), the manufacturer of the generator, had advised IPSC several years earlier that a potential problem may develop concerning stator bars. The problem occurs when small voids in the water connection to the stator bars allow corrosion cells to form that eventually cause leaks in the bars. The generator windings at the Intermountain Generating Station are cooled using a combination of de-ionized water and hydrogen gas. The de-ionized water is pumped through hollow conductors in the stator bars. The stator bars are insulated with epoxy mica insulation. During generator operation the insulated stator bars are surrounded by hydrogen gas.

When the generator is on line, tests of the stator cooling water tank vent and dissolved oxygen in the cooling water are performed routinely to determine if water could be leaking onto the stator insulation. When the generator is off line, a more sophisticated off-line test, called the pressure/vacuum test is used. It can determine the cooling systems integrity, and indicate the possibility a leak exists somewhere in the stator. During the Unit 2 spring outage, inspection of the stator revealed two leaks. These were repaired by stripping the insulation in the suspect area and temporarily patching the holes with an anaerobic cement. During the Unit 1 fall outage inspection a leak was found at a brazed connection and was repaired by

welding. After the outages, IPSC Technical Services began discussions with GE and other utilities and vendors to develop a more permanent repair method.

Baghouse Modifications — Sonic horns were installed by 1994, and an immediate drop in differential pressure was realized. This lower differential pressure resulted in extending the life of the bags to over twice their original estimated life, and lower operating costs.

Engineering Drawing System — Early in the development of the Intermountain Power Project efforts were made to establish a reliable database of plant drawings and documentation. Available technology at the time dictated that this occur primarily in various hard copy formats. As the plant matured and drawings were modified to reflect actual as-built conditions, the master drawings, on aperture cards, started to lose their quality as a tool for current employees. This degeneration in the value of this vast resource was a major concern to management. The most cost effective resolution to this problem was the development of a widely accessible, computer-based master set of drawings. Through the coordinated efforts of DWP and IPSC engineering personnel, a fully functional electronic master database was put in operation for all 170,000 station drawings.

In the early years of operation, it became readily apparent that both the update process and the resulting quality from successive generations of microfilm copied drawings presented a problem for the long-term maintenance of station drawings. It was also obvious that significant resources would have to be applied if the database was to be salvaged, and the effects of as-built degeneration reversed.

IPSC quickly became aware of the many industrial and power facilities that were in the midst of this same conversion, spending well over $1,000,000 for contractors, just to achieve an electronic drawing system where they could begin drawing corrections. IPSC realized that they would have to complete this conversion for far less and do it with existing employees.

Number of Employees — By the end of the year, the number of employees was 582.

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Financing — June 30, the current weighted average borrowing cost was 7.25 percent.